

Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) EP 1 004 871 A3

(12) EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
10.04.2002 Bulletin 2002/15

(51) Int Cl.7: G01N 1/40, G01N 1/34

(43) Date of publication A2:
31.05.2000 Bulletin 2000/22

(21) Application number: 99309431.7

(22) Date of filing: 25.11.1999

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(72) Inventors:
• Cole, Alun
Bridgend, CF35 6EL (GB)
• Reichl, Markus
D 83098, Brannenburg (DE)

(30) Priority: 26.11.1998 GB 9825806

(74) Representative: Gibson, Stewart Harry
URQUHART-DYKES & LORD,
Three Trinity Court,
21-27 Newport Road
Cardiff CF24 0AA (GB)

(54) Sample analysing method and apparatus

(57) An analytical method in which a first flow of inert gas is passed through a sample tube (ST) and a trap (TT) in succession whilst the sample tube (ST) is heated and the trap (TT) is cooled. The sample tube (ST) contains a sorbent material (10) on which one or more volatile substances have been adsorbed or absorbed and the trap (TT) contains a smaller quantity of material

which serves to adsorb or absorb the volatile substance (s) liberated from the sample tube (ST). A second flow of gas is subsequently passed through the trap (TT) and a sensor device (D) in succession whilst heating the trap (TT). The method thus improves the analytical signal provided by the sensor device (D) by concentrating the volatile substance(s) in the second flow of gas.

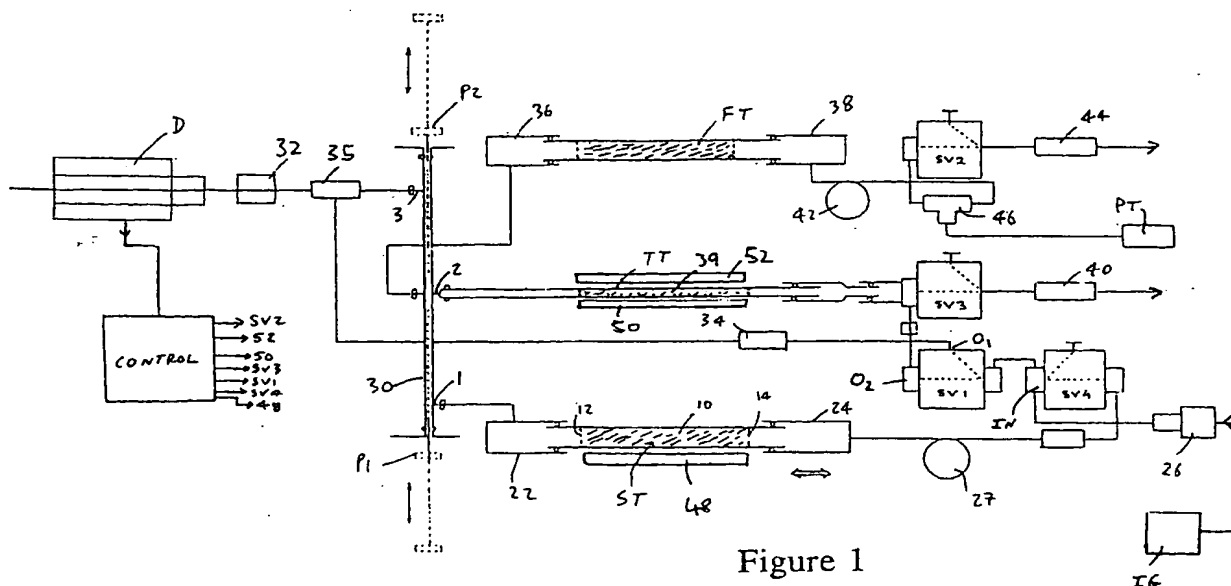


Figure 1



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 99 30 9431

| DOCUMENTS CONSIDERED TO BE RELEVANT | | | |
|--|---|--|---|
| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IntCl.7) |
| X | US 5 588 988 A (GERSTEL EBERHARD ET AL) 31 December 1996 (1996-12-31) * column 1, line 64 - column 3, line 40; figures * | 1-4,6 | G01N1/40 G01N1/34 |
| X | US 5 808 178 A (MACDONALD STEPHEN J ET AL) 15 September 1998 (1998-09-15) * column 7, line 49 - column 8, line 61; figures 10,11 * | 1-6 | |
| X | US 5 402 668 A (MURAKAMI AKI A ET AL) 4 April 1995 (1995-04-04) * column 2 - column 5 * | 1-4,6 | |
| | | | TECHNICAL FIELDS SEARCHED (IntCl.7) |
| | | | G01N |
| The present search report has been drawn up for all claims | | | |
| Place of search THE HAGUE | | Date of completion of the search 3 October 2001 | Examiner Hodson, C |
| CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document | | | |

EPO FORM 1503 03/02 (P4/C01)



European Patent
Office

Application Number

EP 99 30 9431

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-6

Best Available Copy



European Patent
Office

LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 99 30 9431

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-6

Analytical method and device for preconcentrating a volatile material using a cooled trap

2. Claims: 7-13

Analytical method and device for improving signal to noise ratio in a sensor for volatile materials by interrupting the flow of carrier at a predefined moment.

ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 99 30 9431

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

03-10-2001

| Patent document cited in search report | | Publication date | Patent family member(s) | Publication date |
|---|---|---------------------|----------------------------|---------------------|
| US 5588988 | A | 31-12-1996 | DE 4419596 C1 | 01-06-1995 |
| US 5808178 | A | 15-09-1998 | EP 0876607 A1 | 11-11-1998 |
| | | | WO 9714957 A1 | 24-04-1997 |
| US 5402668 | A | 04-04-1995 | NONE | |

EPO FORM P0439

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

Best Available Copy

THIS PAGE BLANK (USPTO)